THE VIRTUAL PROVING GROUND

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First Sighting Of The Objective Force … In Our Cyber Sandbox

Introduction

The U.S. Army Simulation, Training and Instrumentation Command (STRICOM) provides training, testing, instrumentation, and simulation solutions to the Objective Force. Whether modeling new concepts, virtual prototyping of capabilities previously only envisioned, developing tools to facilitate testing of new concepts, or providing training products and services, STRICOM supports the development and deployment of the Objective Force.

Organization

STRICOM is organized around the virtual, constructive, live simulation, and testing domains and has four project managers (PMs) and two specific directorates.

The PM for Combined Arms Tactical Trainers (PM, CATT) focuses on virtual training simulations. PM, CATT provides focused management of the Close Combat Tactical Trainer (CCTT) and support to the U.S. Special Operations Command. The CCTT consists of combat vehicle simulators and emulators operating interactively in a combined-arms synthetic environment representing a battlefield on real-world terrain.

Another product is the Aviation Combined Arms Tactical Trainer – Aviation (AVCATT-A) reconfigurable manned simulator. AVCATT-A is an aviation company/team collective trainer providing the warfighter a mobile, transportable combined-arms synthetic environment where aviation and ground maneuver units train as they will fight—as a team.

The Engagement Skills Trainer (EST) 2000 is a laser-based, small-arms indoor training range that supports training and evaluation of individual marksmanship and of soldiers in judgmental use of force (shoot/don't shoot) scenarios. The EST 2000 is transportable for use by units deploying overseas in peacekeeping, stability, and support operations.

The AC-130U Aircrew/Maintenance Training Device and Testbed is a virtual simulator that supports initial qualification, currency, and mission-specific training of AC-130U aircrews and malfunction-troubleshooting training of both AC-130U aircrews and avionics maintenance technicians.

Simulation

The PM for Warfighters' Simulation (PM, WARSIM) focuses on constructive simulations. In partnership with the National Simulation Center, PM, WARSIM develops and sustains constructive simulations. These simulations primarily support the Army's command and staff training requirements, from company/battalion command and staffs through echelons above corps and joint task force levels, across the full-mission spectrum (stability and support operations through mid- or high-intensity conflict). WARSIM is the next-generation computer-based command and control constructive simulation training system that will eventually replace corps battle simulation.

An integral component is the lower level constructive simulation, One Semi-Automated Forces (OneSAF). OneSAF are compatible, next-generation computer-generated forces, from entity up to brigade level, supporting all modeling and simulation (M&S) domains with an emphasis on human-in-the-loop and non-human-in-the-loop.

Tactical Simulation (TACSIM) is an intelligence training simulation system that provides warfighters a single robust intelligence simulation model. TACSIM provides simulated intelligence collection and reporting through user organic communications and processors.

The Digital Battlestaff Sustainment Trainer collectively simulates tactical situations and resultant message traffic to stimulate the command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) systems in a unit's tactical operations center.

Virtual Training

The PM for Training Devices (PM, TRADE) is the Army Materiel Command (AMC) executive agent for all instrumentation and Tactical Engagement Simulation Systems (TESS) at the maneuver combat training centers (National Training Center, Joint Readiness Training Center (JRTC), and the Combat Maneuver Training Center), soon to expand to our home-station training as well. The PM is responsible for training systems and instrumentation to support live-fire ranges and Military Operations on Urbanized Terrain (MOUT) home-station and deployed units. Products include the following:

- **Multiple Integrated Laser Engagement System 2000**—an integrated laser-based training system that provides commanders direct-fire force-on-force training for individuals, vehicles, and weapons.
- **JRTC MOUT-Instrumentation System (JRTC MOUT-IS)**—provides automated data collection and feedback, command and control of MOUT exercises, and interactive target systems to support a battalion-size force.
- **The Live Environment Training Systems Strategy**—encompasses a "system-of-systems" to be used in conducting future live training. This will include a set of standards and architectural guidelines to enable development

of flexible, effective, interoperable, and maintainable live-training products such as TESS and live training instrumentation (LTI). It will also include interfaces with the virtual and constructive domains, giving this system an across-the-board training capability. The common training instrumentation architecture is the enabling architecture that specifies the components and interfaces for all LTI products and establishes the standards for development, test, and deployment of those components.

The PM for Instrumentation, Targets and Threat Simulators (PM, ITTS) manages major ITTS required for technical and operational test and evaluation as well as operates and maintains the targets for test and training for the U.S. Army. Products and services include the following:

• **Mobile Automated Instrumentation Suite**—the live instrumentation suite supporting operational and force development testing of current and future weapon systems.

• **Threat Simulator/Simulation Program Plan**—a process co-chaired by the AMC Commander and the Army Acquisition Executive that provides a means to identify and compile total Army requirements for threat materiel solutions.

• **Virtual Targets Program**—creates highly detailed, 3-D geometry models for use in M&S. These virtual targets are typically created by collecting data from actual hardware to produce a high-fidelity model that can be used in radar-signature analysis and in a wide range of other simulations.

STRICOM's Operations and Support Directorate is devoted to soldier warfighter tools in every aspect. This directorate provides program management for life-cycle support and operations. It also plans and manages an integrated logistics support and materiel readiness program to support development and fielded systems. Logistics and operational support encompass traditional elements of logistics plus "turn-key" operations for training systems and combat training centers. Readiness includes those efforts mentioned above and procurement, reprocurement, modification, and life-cycle management of fielded equipment. The sun never sets on this directorate when it comes to providing support to operational commands.

STRICOM's Engineering Directorate plans, manages, and executes an integrated life-cycle modeling, simulation, and instrumentation engineering program for the command. This program includes technology-based research, front-end analysis, design, testing, production, fielding, and post-deployment. Additionally, the directorate manages the horizontal technical integration process across command programs or products and serves as the technical lead for research, process management, and integration of the advanced distributed simulation environment.

A key facility operated by the Engineering Directorate is the Central Florida Technology Development Center (CFTDC). The CFTDC is a multiuse research and development facility comprised of the Innovation Center and the M&S Testbed. The Innovation Center is a multimedia facility used for demonstrating M&S technologies, distance learning, and team building among joint Service, Army, federal, state, academia, and national and local industrial partners. The M&S Testbed is a reconfigurable, interoperable laboratory for exploring distributed simulation technology and conducting experiments related to Army-approved science and technology objectives.

The Road Ahead

Future training environments are not simply devices or infrastructure, but a blend of necessary training capabilities permitting the future commander to take training to soldiers, wherever they are. It means embedded simulations, reachback capabilities, and a necessary link to a support structure geared to soldiers receiving training where they need it instead of "going to training." The common training instrumentation architecture will permit interoperability of legacy systems with the emerging embedded simulation needs of the Objective Force. OneSAF ensures interoperability between the Army's next-generation virtual simulator (CCTT) and constructive simulation (WARSIM). The Live Environment Training Strategy is the bridge from live to virtual and constructive simulations with TESS and LTI. The Army Test and Training Interoperability Conference, chaired by the PM, ITTS, works solutions from the ground up for integrating test and training equipment, standards, and architecture.

Interoperability

STRICOM emphasis on the Objective Force is not limited to products and services. The Product Manager for Simulation Technology Integration (PM, STI) has two focus areas: requirements integration and Army transformation. This office will facilitate support to customers by coordinating integrated requirements across the command. Working relationships with the combat and training development community will provide the command an Objective Force focus through an organization specifically dedicated for that purpose.

Another STRICOM organization emerged from the outset with a future capabilities mindset. On Aug. 18, 1999, the U.S. Army awarded a 5-year contract to the University of Southern California to create the Institute For Creative Technologies (ICT). ICT's mandate is to enlist the resources and talents of the entertainment and game development industries and to work collaboratively with computer scientists to advance state-of-the-art training simulation. The talents of ICT members and visionaries in the entertainment industry have already provided an environment from which to launch a variety of concepts. These concepts range from animated representations of new equipment or system possibilities to glimpses of potential interactive training environments with "synthespians" (synthetic actors powered by artificial intelligence engines and graphics of photo-real quality), all with a goal of an environment that can make the soldier sweat.

Conclusion

STRICOM is prepared to support the Army's training, testing, instrumentation, and simulation needs for transformation to the Objective Force.

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